ZOÖLOGY.

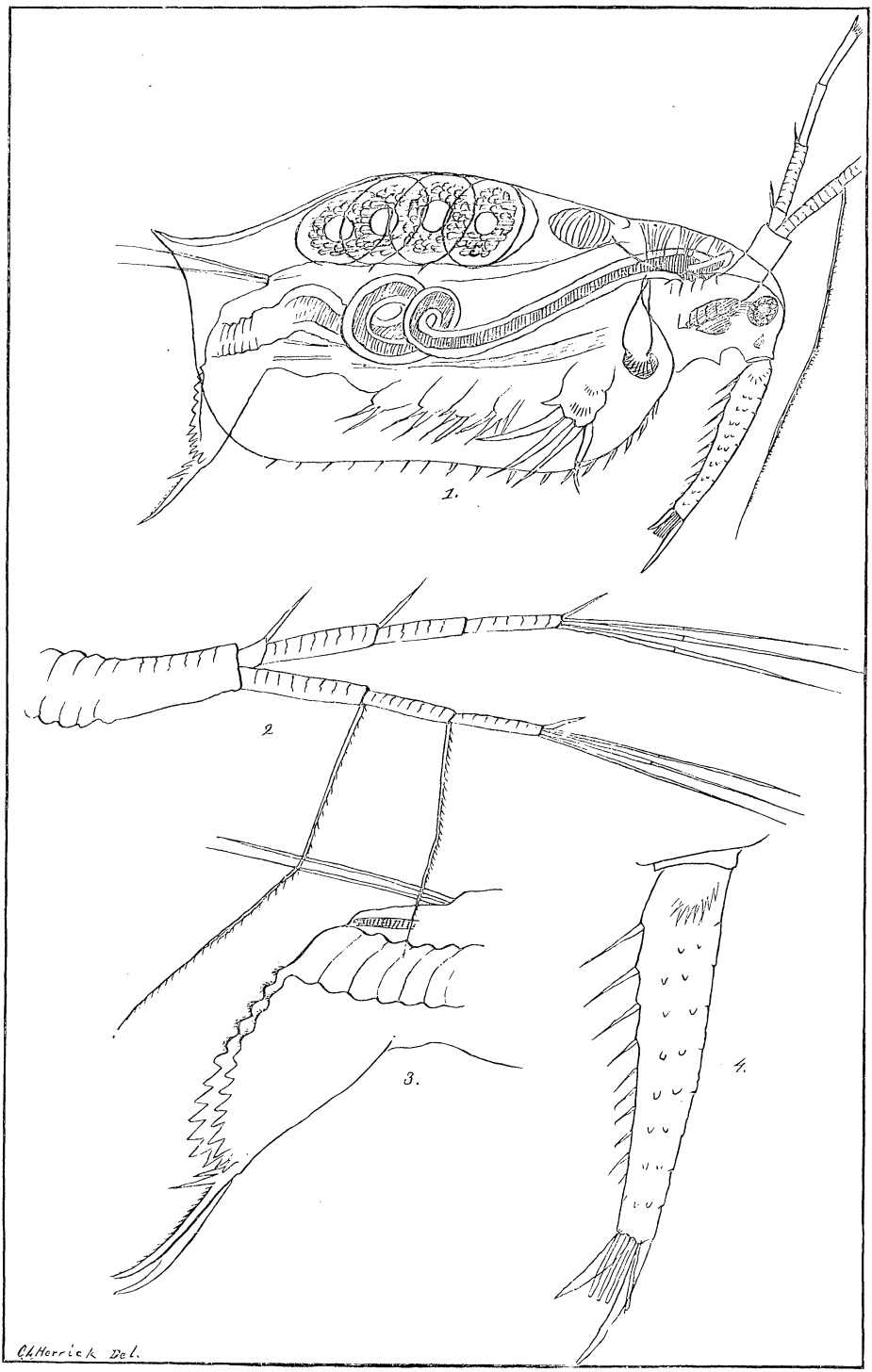
A NEW GENUS AND SPECIES OF THE CRUSTACEAN FAMILY LYNCODAPHNIDÆ.[1]—*Lyncodaphnia*, gen. n. (Plate XVI, Fig. 1–4). Form much as in species of Alonella, etc., truncate behind; superior antennæ like Macrothrix, attached movably to the end of a blunt prominence beneath the head; second or swimming antennæ slender, four-jointed ramus with three long setæ and a stout thorn at the end of distal segment, the joint following the short basal one with a thorn above, the following joint unarmed (!); three-jointed ramus as in Macrothrix, the basal segment armed with a much elongated seta; eye relatively small, pigment fleck (*macula nigra*) present; *intestine twice convoluted*, expanded in front of the rectum, opening in the "heel" of the post-abdomen; post-abdomen slender, sub-triangular, margined behind with a double series of spines; terminal claws large, and furnished with a long and short spine near the base; shell margined below by stout movable spines.

Few more interesting forms than the one forming the type of this very peculiar genus have been found, since it combines in a curious manner those characteristics hitherto regarded as distinctive of the families Daphnidæ and Lynceidæ. Kurz says:[2] "Keine cladocerenfamilie bildet eine so streng in sich abgegrenztes natürliches Ganze, wie eben die Lynceiden," and this after recognizing the relationship of Macrothrix and Lathonura to the Lynceids, by placing them in the sub-family Lyncodaphnidæ. The form above referred to, however, has quite as close affinity to the Lynceidæ as to Macrothrix, though it resembles the latter rather more on a superficial examination, indeed if one were to divide the animal back of the heart and examine the two portions independently, it would be impossible to avoid referring the head to Macrothrix and the body to some Lynceid genus. Thus is furnished another of those curious intermediate forms which remind us that the possibility of distinguishing families and genera, lies alone in the meagerness of our knowledge.

There can be no doubt that this genus should stand next to Macrothrix, but it will be necessary to modify a little the diagnosis of the Lyncodaphnidæ to receive it, and it then appears that it cannot longer remain a sub-family of the Daphnidæ, hence I have proposed to give it equal rank with that body and the Lynceids as an independent family, Lyncodaphnidæ, including the genera Macrothrix, Lyncodaphnia, Drepanothrix, Lathonura (= Pasithea), Ilyocryptus. As thus limited a very natural group is formed, in size and isolation corresponding well with the other related families.

[1] Series secunda generum (Daphnidæ), sub-fam. Lyncodaphninæ Kurz. Danmark's Cladoceras, p. 134. Dodekas neuer Cladoceren, P. E. Müller, p. 24.

[2] Kurz. Dodekas neuer Cladoceren nebst einem kurzen Ubersicht, der Cladoceren fauna Bönmens, p. 30.



Lyncodaphnia macrothroides.

Lyncodaphnia macrothroides, sp. n. — Form sub-rectangular, greatly elongated; length $\frac{12}{100}^{cm}$; height $\frac{5}{100}^{cm}$ or less; first antennæ long and slightly curved, bordered behind by about ten spines, and terminating in two or three sword-shaped unequal spines and several sense-hairs, about $\frac{17}{1000}^{cm}$ long; swimming antennæ very slender, as in Macrothrix, $\frac{6}{100}^{cm}$ long; head not marked off by a depression from the body, small and extending below into a blunt elevation for attachment of antennæ; labrum rather large; eye small; macula nigra conspicuous but not large; anterior feet strongly armed with curved spines; intestine anteriorly is furnished with cœca, is twice convoluted, broadened before entering the rectum, and opens some distance beyond the anal setæ in the heel of the post-abdomen; post-abdomen rather slender, toothed behind with a double series of about twelve prominences, ciliated near the anus but distally becoming strong, sharp teeth; terminal claws large, curved only at the end, pectinate and bearing near the base a small and large tooth; eggs much like those of Macrothrix. Male not seen.

Occurs in Lake Minnetonka, Hennepin county, Minnesota; rare.—*C. L. Herrick.*

Food of the Nestlings of Turdus migratorius.—In this vicinity robins usually rear two broods in a season—sometimes three—and occasionally young birds that are hatched in May will mate and repair the nest in which they were born, or build a new one, and rear a brood in August and early September, thus becoming parents at the age of about four months. The nestlings of the earlier broods are mostly, if not exclusively, fed upon animal food—insects in all stages of development—while the later broods receive a large share of fruit when in the nest, and after leaving it, so long as they require the attention of their parents. Near the farm-house, or in the village, the old birds take strawberries, currants, gooseberries, cherries, and the cultivated small fruits generally for their young as well as for themselves, and in the fields and woods they use almost indiscriminately strawberries, blackberries, huckleberries, blueberries, and wild cherries for their nestlings, without giving up the use of insects. The latest broods frequently get a taste of early grapes, nor is it uncommon for the parents to carry to their little ones mouthfuls of mellow apples and pears. There are but few small fruits, cultivated or wild, that are not, to some extent, appropriated as food for the nestlings when the parents can get them, and I think from observations of several years that at least one-third, probably one-half, of the food of nestling robins consists of the various fruits in their respective seasons. In the later broods, insects predominate as food during the first half of their nest-life, the fruits being principally used during the remainder and until the young are able to take care of themselves.

The statement often seen in the books that "robins feed their young entirely upon animal food," is altogether too sweeping. Without doubting the veracity of the person who first made use of this expression, I think his observations must have been confined to the earlier broods, and in the season before any fruits were ripe or approximately ripened. That robins can be reared upon animal food alone is probably true; that they are not so reared when fruits are obtainable is equally true, and in a dearth of insects they can be raised upon food consisting largely of fruit.

I am fully aware of the fact that in areas of some extent—usually quite limited however—the small-fruit grower sometimes finds the robins very annoying, and even injurious, but to the community at large, and certainly to the agriculturist and market gardener, they are decidedly beneficial and of incalculable worth, from their enormous destruction of noxious insects, especially in spring and early summer. Protected as they are by law a part of the season, I sincerely wish that the "close" time were measured by the year.—*Elisha Slade, Somerset, Mass.*

More Complaint about Passer domesticus.—This proliferous gourmand is adding a new item to his bill of fare with us this season. As soon as wheat was fully headed out, dozens of these pests could be seen in one flock to settle down in the fields on the wheat-stalks and commence picking out the grains. Now that wheat is cut and shocked, they light on these and take their fill. I have noticed similar reports in some of the agricultural papers. —*J. Schneck, Mt. Carmel, Ill.*

A Prolific Garter Snake.—July 26th, 1882, a specimen, thirty-four inches long, of *Eutænia sirtalis* B. and G., was brought to me from which were taken *seventy-eight* young; these varying from seven to five inches in length. The young were pressed from the vent. The first twenty or so were free from any covering. The remainder were in sacks, from three to five snakes in each.

May not this latter fact lead us to think this species possibly also ovo-viviparous as well as viviparous? I do not know that the number of young is without a precedent, but it exceeds, by far, anything I have observed.—*J. Schneck.*

The Spotted Spreading Adder Viviparous.—Since sending the note on the *Garter Snake*, I have learned of a still more remarkable case. A "spotted spreading adder" was shot in two, near the middle; when *eighty-seven* young were taken from her body. The snake was a large one of this species. The young were near six inches long. This occurred within the last two weeks, and in the presence of nearly a dozen persons, from several of whom I have gathered the facts.—*J. Schneck.*

HABITS OF THE ENGLISH SPARROW.—The following interesting note has been received from Dr. A. K. Fisher, of Sing Sing, N. Y.: Knowing your great *fondness* for *Passer domesticus* I send you a brief account of one of the various ways in which he imposes upon his superiors. The following was related to me by a friend, who was an eye-witness. You well know that when robins are feeding their young they will often collect a number of worms, forming a large billful, before making a trip to the nest. Well, the sparrow noticed this, too, and when the robin would alight to pick up something more, he would dash down beside the robin and snatch whatever might be in his mouth, then fly a few feet off. The robin would hop after him, when he would make another short flight until the robin would give up and go and hunt for something more. My friend saw the sparrow do this five or six times one afternoon.—*Elliott Coues, Washington, D. C.*

THE BLACK-FOOTED FERRET (*Putorius nigripes*) IN TEXAS.—Mr. Frank J. Thompson, of the Cincinnati Zoölogical Gardens, informs me of the reception there of a living specimen of this rare species, perhaps the first one ever placed on public exhibition. It was captured near Abilene, in Taylor county, Texas, a locality far beyond the previously known range of the species, as assigned in my "Fur Bearing Animals."—*Elliott Coues, Washington, D. C.*

THE OCCURRENCE OF DEMODEX PHYLLOIDES CSOKOR, IN AMERICAN SWINE.—The meat inspector for thecity of Toronto, Mr. R. Awde, has just handed me for examination, a piece of pork skin, marked by numerous white spots shining through the epidermis, which on separation of the subcutaneous tissue, turn out to be sebaceous glands, enlarged to the size of a grain of barley, and crowded with multitudes of mites (Demodex) in various stages of development. The mites belong to the species described by Dr. Johann Csokor (Verhandl der K. K. zool-bot. Gesell in Wien. Vol. XXIX, 1879, p. 419, et seg. and Pl. VIII), as occasioning large cutaneous pustules and even ulcers in a herd of swine from Galicia; so far as I am aware it has not been recorded since.

Demodex phylloides measures only 0.24^{mm} in length, while *D. folliculorum* (the little mite which occurs in the sebaceous glands near the nose in man) is often twice as long. This difference in length is solely due to the excessive shortness of the abdomen in *D. phylloides*, for the cephalothorax in the latter form is undoubtedly more robust than in any other of the described species.

D. canis occasions a very troublesome cutaneous affection in dogs. *D. ovina* occurs in the meibomian glands in sheep (vide Zürn, Schmarotzer der Haussaügethieren), and Mr. W. Faxon has recorded *D. folliculorum* from the ox, but from an economic point of view. *D. phylloides* may possibly become more disastrous than any of these should its attacks attain the extent described by

Csokor, which of course would destroy or materially depreciate the market value of the animals affected. Csokor calls attention to the fact that all of the herd in question were affected, as indicating a much readier infection by contact, than has been observed in the case of the dog. It is further to be noted that the mites in each gland are not to be reckoned by individuals or tens, as in other animals, but by thousands.

Mr. Awde finds about one pig in twenty affected, from now to the end of the pork season. The parts involved (as also in Csokor's cases) being the head, belly, and legs.—*R. Ramsey Wright, University College, Toronto.*

How Bad Weather Affects the Birds.—The early part of this season was very cold and wet, seriously impeding every operation on the farm. The temperature finally became more genial during the month of June, though the rains have kept coming at frequent intervals. Grasses, wheat, oats, and potatoes have been growing very satisfactorily, but corn, our great staple, has been sadly impeded, and its promise to-day may be set down as simply "doubtful." Coupled with all this ill luck, we have had a frequent repetition of high winds—tornadoes, in many localities, as the reader will remember. At my place we had a terrible gale the night before the destructive tornado at Grinnel; trees were blown down, fences destroyed, and the crops damaged in all directions.

This state of things has had a very disastrous effect upon the birds. They have not been as plenty as during previous seasons. I noticed this especially in regard to the house wrens, blue birds, redwing blackbirds, crow blackbirds, blue jays, Baltimore orioles, and indigo birds, possbily other species might be included. It has seemed to me that they have been kept away by this untoward weather. Then again, after the terrible storms, we have found many young birds dead, while the winds and beating rains have destroyed many nests. My attention has been directed to this subject all the season through, and I cannot but regard it as having been thus far, a most unfavorable year for all kinds of small birds.—*Charles Aldrich, Webster City, Iowa. July 3, 1882.*

Protective change of Color in a Spider.—I suppose you know the little flower spiders, that conceal themselves in the flowers, aud seize any unwary insect that may chance to come within their reach. I have generally found them white and yellow. I suspected they changed their color, and by experiment, I find that this is so. If I take a white one and put it on a sunflower, it will get quite yellow in from two to three days. I believe they capture almost anything, but they seem to be partial to the bees. I found one the other day with a wasp, the latter was not yet dead, but it was tightly held by the throat by the spider. The next day the wasp was found lying dead under the flower.—*James Angus.*

THE STRUCTURE AND DEVELOPMENT OF THE SKULL IN STURGEONS.—Professor W. K. Parker has been working out the development of the skull in *Acipenser ruthenus* and *A. sturio*, the Russian sterlet and the common sturgeon of the shores of Great Britain. The larvæ of the sterlet that were dissected varied from one-third to seven-twelfths of an inch in length, yet even in the smallest of these the cartilage was becoming consolidated. In the skull of the sturgeon the *symplectic*, which supports the mandibular and hyoid arches, is a separate cartilage, as in the Selachians, not a mere osseous center as in *Lepidosteus* and the Actinopteri; the peculiar modifications of the primary arches of the face show themselves during chondrification, thus the hyoid arch is from the first, inordinately large, yet in the larva the head of the great subdivided hyoid pier only articulates with the auditory capsule. There is no room for doubt that all the branchial arches are developed in the outer walls of the large respiratory pharynx, quite independently of the base of the skull and the fore part of the spinal column. Professor Parker declares that he has come to the conclusion that no true branchial or visceral arches exist in front of the mouth; the first cleft is that between mandible and hyoid, and the first arch, the mandibular. The true axis of the cranial skeleton ends under the fold of the mid-brain, and the "trabeculæ cranii" are merely fore-growths from the parachordals. In the sturgeons the ganoid scutes of the head are so far under the influence of the huge chondrocranium, to which they are applied, that they may be called frontal, parietal, etc., yet such scutes are not the exact homologues of the bones so named in the Actinopteri. The sturgeons, on the whole, stand between the Selachians and the bony ganoids, yet not directly in the line between the Selachians and the bony ganoids, and not directly in the line between any one family of the former and any one family of the latter. Larval sturgeons are miniature sharks in appearance, since for weeks they have a shark-like mouth, true teeth in the throat and on the lips, and very long exposed gills.

THE AMYLOLYTIC AND PROTEOLYTIC ACTIVITY OF PANCREATIC EXTRACTS.[1]—Dr. W. Roberts gives the result of his researches upon the Amylolytic (sugar-forming), and Proteolytic action of the pancreatic juices. Following Kuhne, he proposes to distinguish soluble ferments, devoid of powers of growth and multiplication, from organized ferments, such as yeast, by giving them the name of *enzymes*. The pancreas is the source of two enzymes, *pancreatic diastase*, and *trypsin*, which latter has the proteolytic power of converting casein into *metacasein*, which curdles by simple boiling. The pancreatic juice of the pig has great diastatic power, since it is capable of transforming four times its weight of dry starch at 40° C., to the point at which it no longer

[1]Proc. Royal Society. May 5th, 1881.

gives a color reaction with iodine, in five minutes. If the diastatic power of the pig's pancreatic juice be represented by 100, those of the ox and sheep, feeders on matters poor in starch, are respectively only eleven and twelve. Cold retards the action of the pancreatic juice; a temperature of from 30° to 45° C., is most favorable to diastetic, while one of 60° C. is most favorable to proteolytic or tryptic action; and these actions cease to take place at 70° C., and 80° C., respectively. Double the quantity of an enzyme will do its work in half the time, while half the quantity will require double the time, but this rule of inverse proportion is controlled by the rule that an enzyme liberates its energy at a progressively retarded rate.

THE BIRDS OF HELIGOLAND.—The Bull. Soc. Zoöl. de France (1882) contains an interesting account of the birds of Heligoland, by M. E. de Selys Longchamps. Herr Gatke, secretary of the local government, is the resident ornithologist, and has collected 400 species out of the 500 known in Europe, including many examples of some of the rarest species. In his own words, "Birds from very different regions, from the north and south of Europe, and all the north of Asia and America, choose this solitary rock as a place of repose during their migrations." The island, a more or less clayey and ferruginous rock of lower iriassic age, of so little consistency that, at the rate it is wearing away, it will disappear in four or five hundred years, lies in the direct course of the birds which migrate every year from Southern Europe and Africa to the Arctic regions. As many as 15,000 larks were captured on the evening of Nov. 6, 1863. M. Gatke has proved, by the concordant dates of the captures of erratic birds, that these accidental migrations are regular up to a certain point, since for the same species they take place at the same time of the year, and in general consist of several species coming from the same geographical regions. Among the birds taken are *Phyllopseuste borealis* (Arctic Asia, N. E. America); *Phyl. nitidus* (Himalayas); *Phyl. coronatus* (Malaysia); *Calamodyta agricola* (India — not before observed in Europe); *Cal. certhiola* (coast of Sea of Ochotsk); *Pluvialis virginicus* (Alaska); *Totanus rufescens* (America), and *Larus roseus*, a circumpolar bird, lacking in most collections.

ZOOLOGICAL NOTES.—The *Quarterly Journal of Microscopical Science* for October, contains a brief account, by Dr. R. Horst, with excellent figures, of the development of the European oyster. He claims, contrary to Lacaze Duthiers and W. K. Brooks, that the bivalve shell of Ostræa is originally unpaired, not developed from two separate halves, which afterwards unite and form a hinge.——The thread cells and epidermis, with the lateral glands of Myxine, the hag-fish have been studied by J. E. Blomfield.——The eye of Spondylus has been found by S. J. Hickson, to be

similar to, though less developed, than the eye of Pecten.——In the same journal, P. H. Carpenter continues his notes on Echinoderm morphology.——E. R. Lankester claims that he has discovered in the tail of Appendiculariæ, that the muscles are arranged in a series of segments (myomeres), seven in number, one corresponding to each pair of nerves given off by the axial nerve cord. ——H. N. Moseley, from a study of the soft parts, finds that the corals Seriatophora and Pocillopora are genuine corals like Madrepores, as regarding the latter genus confirming Verrill's opinion as to their affinities.——The Cilio-flagellate Infusoria have been studied by Bergh, who proves that the external membrane or skeleton consists of cellulose, this being the first time that cellulose has been demonstrated in the cell-wall of the Protozoa. The protoplasm of these organisms says Prof. Parker, in his review of Bergh's work, is usually divided into ectoplasm and entoplasm. The latter has been found by Bergh to contain chlorophyll, diatomin (the yellowish-brown coloring matter of diatoms), and starch. Chlorophyll is already known to occur in many animals of widely separated groups; starch has hitherto been proved to exist only in the green Turbellarians, and diatomin has never before been known out of the vegetable kingdom. Bergh believes that in many genera of these infusoria, the nutrition is entirely like that of a plant, and that no solid nutriment is ever taken up. Bergh figures the lasso-cells or trichocysts of Polycricus, as originally discovered by Bütschli.——Mr. A. Agassiz, continues in the Proceedings of the American Academy of Arts and Sciences, his account of the young stages of osseous fishes. Many interesting points of relationship between the embryos of bony fishes and their fossil forms, have been traced by comparing the structure of the tail of the fish embryo, as it passes from the leptocardial stage through the various stages of heterocercality, to a so-called homocercal stage. This relation, says Agassiz, is very marked, and has led to some important generalizations. He finds, however, that the comparisons of the pectorals, or of the dorsal and anal fins does not lead to such interesting results, though as far as the pectoral fins are concerned, their resemblance in the early stages of the bony fish embryo to the Crossopterygian type of pectorals is very striking. Excellent figures are given of the very young striped bass, blue fish, butter fish, toad fish, goose fish, sculpin, lump fish, stickleback, cod, smelt, and a few others.——Besides an elaborate and beautifully illustrated article, with anatomical details on the larvæ of mayflies, by A. Vayssiére, recent numbers of the *Annales des Sciences Naturelles* contain a continuation of A. Milne-Edwards memoir on the avi fauna of the Antarctic regions. The stomachal armature of the crab, *Birgus latro*, is described by M. Mocquard. The more notable articles in the number issued in August, are Rietsch's study of *Sternaspis scutata*; Fuch's paper on the fauna of deep seas, and Giglioli's essay on the deep-sea

fauna of the Mediterranean; there are besides, several ornithological papers by Oustalet and others.——*Zeitschrift für Wissenschaftliche Zoologie*, August 1, contains an elaborate memoir by H. Ludwig, on the embryology of a star fish, *Asteria gibbosa*. There is throughout the Echinodermata a mode of development, which must be spoken of as a metamorphosis, all the larvæ being ciliated, with a mouth and anus on one side. The processes by which the primary larva is converted into the echinoderm appear to be essentially the same in all cases; all that happens in a more complicated history, being the fact that in the secondary larvæ there is an absorption of those larval parts which had themselves become secondary. The secondary characters are not to be regarded as having anything to do with the future organization of the echinoderm, but as adaptations proper to the larval life, and disappearing at its close. There is no true solid morula in the earliest phases of development, but a blastosphere with a unilaminate wall; the gastrula is formed by invagination. Especial attention is given to the mode of origin of the hydrocœl, the blood vascular system and stomodæum, as well as the skeleton.

ENTOMOLOGY.[1]

A NEW RICE STALK-BORER: GENUS-GRINDING.—We quote the following from an article on a new Lepidopterous insect which, in the larva state, bores the stalks of rice. The article occurs in the annual report of the U. S. Entomologist for 1881-2, already printed:

"We have had some difficulty in deciding as to the true specific determination of this insect, chiefly because of a close general resemblance which it must possess to other species. Mr. Grote, when we showed him a specimen last autumn in New York, thought it might possibly be his *Chilo crambidoides*, while Professor Fernald determined it, from a specimen which we sent him, as *Diphryx prolatella* Grote,[2] stating at the time that he might be wrong, but that, having seen Mr. Grote's type, he considered our insect identical with it so far as he could trust his recollection. The specific description of *D. prolatella* certainly does agree very closely with the species we are considering, which has also the mucronate clypeus of Diphryx, but in order to refer our insect to *D. prolatella* we must assume that Mr. Grote erected his new genus, *Diphryx*, on a mutilated specimen which had lost its maxillary and part of its labial palpi, for the genus is founded on short labial papi which hardly exceed the face, and the absence of maxillary palpi—characters decidedly exceptional and remarkable in the family. In order to settle the matter, therefore, we again referred, through Mr. Henry Edwards, a perfect specimen

[1] This department is edited by Professor C. V. RILEY, Washington, D. C., to whom communications, books for notice, etc., should be sent.

[2] N. Am. Moths, Bull. U. S. Geol. Survey; VI, No. 2, p. 273.